CHAPTER 3.8
NOISE

The analysis contained in this chapter is based on the project's site specific noise analysis (*Acoustical Analysis Report, for Mountain View IV Wind Energy Project, Palm Springs, California*, November 2005) prepared by Channel Islands Acoustics and is provided to validate the project's compliance with the noise provisions of the Palm Springs Noise Ordinance. The complete text for the noise report can be found in *Appendix F*.

3.8.1 Affected Environment

Noise Fundamentals

To provide a context for understanding this issue, various noise fundamentals are discussed below.

Sound is measured as Sound Level on the decibel (dB) scale, using the A-weighted frequency response unless otherwise specified. This measurement system approximates the subjective response of the human ear to a broad frequency range noise by adjusting for the relative differences in hearing sensitivity to the very low through very high frequencies of the audible spectrum. Although the standard unit of sound level is dB, it has been common to append an "A" or "(A)" to indicate use of the A-weighting filter. The decibel scale has a value of 0 dB at the threshold of hearing and 140 dB at the threshold of pain. Each interval of 10 dB indicates a sound energy ten times greater than before, which is perceived by the human ear as being roughly twice as loud. A one (1) decibel increase is just audible whereas a 10 decibel increase means the sound is perceived as being twice as loud as before. Examples of the sound level of various noise sources include: the rustle of leaves (10 dB), a motion picture studio (20 dB), a library (35 dB), ambient noise outdoors (50 dB), normal conversation at 5 feet (55 dB), and a busy street at 50 feet (75 dB).

In an area which is relatively flat and free of barriers, the sound level resulting from a single "point source" of noise drops by 6 dB for each doubling of distance or 20 dB for each factor of ten in distance. This applies to fixed noise sources and mobile noise sources which are temporarily stationary such as an idling truck or other heavy duty equipment operating within a confined area (such as industrial processes or construction activities). In addition to this wave spreading loss, sound is attenuated (reduced) by ground and atmospheric absorption at a rate that depends upon sound frequency, air temperature and humidity, ground porosity, etc. In the project area, based on wind turbine noise spectra and average atmospheric and ground conditions, a typical attenuation rate of 1 dB per 1000 feet is achieved.

Noise can cause temporary physical and psychological responses in humans. Three harmful effects of noise which are commonly of concern include speech interference, the prevention or interruption of sleep, and hearing loss. Speech interference begins to occur at about 40 to 45 dB and becomes severe at about 60 dB. Sleep prevention can occur when intruding noise levels exceed 50 dB

although ill or elderly people are particularly susceptible to noise-induced sleep interference, which can occur when intruding noise levels exceed the typical 35-45 decibel background noise level in bedrooms. Hearing loss, which may begin to occur with prolonged exposures at 75 dB, is one of the most harmful effects of noise on people and results with exposure to very loud, impulsive, or sustained noise.

The noise tolerance of different land uses will vary. For example, schools, hospitals, churches and residences are more sensitive to noise intrusion than commercial or industrial activities.

Existing Noise Environment

The primary existing sources of noise in the project vicinity are from high winds through the San Gorgonio Pass, the Union Pacific Railroad, located north of the project site, aircraft flyovers, existing wind turbines to the north and west, and traffic using North Indian Canyon to the east, Highway 111 to the west, and Interstate-10 (I-10) to the north.

3.8.2 Regulatory Environment

Federal Guidelines

Federal codes, primarily the Occupational Safety and Health Act of 1970 (OSHA), exist that address worker exposure noise levels. These regulations would be applicable during construction and maintenance of the Proposed Project and alternatives. These codes limit worker exposure to noise levels of 85 dB or lower over an 8-hour period. The U.S. EPA (U.S. EPA 1974) has established general guidelines for noise levels in sensitive areas. These general guidelines have been established to give state and/or local governments guidance in establishing local laws, ordinances, rules, or standards. The U.S. EPA guidelines suggest that the average residential outdoor noise level be 55 dB, and the indoor level be 45 dB. The indoor level also applies to hospitals, schools, and libraries.

State Guidelines

As with federal standards, State of California regulations (California Noise Exposure Regulations and Title 8, CCR, Section 5095) address worker exposure noise levels. These regulations limit worker exposure to noise levels of 85 dB or lower over an 8-hour period. The State of California has not established noise levels for various non-work-related environments.

Local Guidelines

It is the policy of the city of Palm Springs to reduce noise in the community and to prohibit unnecessary, excessive and annoying noises from all sources subject to its police power. The City recognizes that noise can be detrimental to the health, welfare, safety and quality of life of the

citizenry and in the public interest it shall be restricted. In order to implement the goals of the noise element of the City's General Plan, the City of Palm Springs has established general guidelines for noise levels within the community. Palm Springs Noise Ordinance 11.74.044 establishes a wind energy noise limit of 55 dB (50 dB for noises with pure tone components) at residences and other noise sensitive uses.

3.8.3 Environmental Consequences

Methodology and Significance Criteria

The assessment of potential noise impacts considers the introduction of anticipated noise levels generated during project construction and operation to ambient noise levels in areas where sensitive receptors exist. The Proposed Project and alternatives would have a significant effect on the environment if noise generated during construction or operation would:

- Result in a significant increase in noise levels to sensitive receptors in the area; or
- Conflict with applicable noise restrictions or standards imposed by regulatory agencies.

Project Impacts

Potential noise impacts are commonly divided into two groups; temporary and long-term. Temporary impacts are associated with noise generated by construction activities. Long-term impacts are associated with impacts on surrounding land uses generated by the project and those impacts which occur at the project site.

Short-Term Construction Impacts

Short-term acoustic impacts are those associated with construction activities necessary to implement the proposed project. These noise levels may be higher than the ambient noise levels in the project area currently, but will subside once construction is completed. However, given the ambient noise environment as described above, noise levels due to construction are not expected to be substantially higher. Two types of noise impacts are considered during the construction phase: (1) the transport of workers and equipment to the construction site which can incrementally increase noise levels along the roadways leading to and from the site; and (2) noise generated by the actual on-site construction activities.

In regard to transportation noise, the project construction traffic would only generate approximately 25 daily trips and would occur within an area impacted by existing roadways (i.e., North Indian Canyon, I-10), wind turbine and railroad noise, in addition to the prevalent wind noise. The *Coachella Valley Association of Governments* (CVAG) *2006 Traffic Census Report* indicates that North Indian Canyon Drive south of I-10 has approximately 18,978 average daily trips (ADT), while

2005 Caltrans figures show an ADT of 93,000 for I-10 at Indian Canyon (www.dot.ca.gov). Typically, it takes a doubling of traffic volumes to result in a 3.0 dBA increase, which is considered the minimum perceivable noise increase (*Highway Traffic Noise Analysis and Abatement Policy and Guidance*, U.S. Dept. of Transportation, June 1995). Therefore, given the high traffic volumes on adjacent roadways, noise impacts due to the minimal temporary increase in traffic will not be discernable to sensitive receptors in the project area. Regarding noise levels associated with construction, the highest noise typically occurs with earth moving equipment which includes excavating machinery (backhoes, bulldozers, excavators, trenchers, front loaders, etc.) and road building equipment (compactors, scrapers, graders, etc.). Typical operating cycles may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Such equipment will be used for creating new access roads, smoothing existing roads and trenching for creation of wind turbine foundations and for placement of transformers.

Noise levels at 50 feet from earth moving equipment typically range from 73 to 96 dBA. Construction equipment noise typically has a drop-off rate of 6 dBA per doubling of distance (U.S. Environmental Protection Agency, 1971). Based on this standard, noise levels associated with the earth moving equipment would be approximately 67 to 90 dBA at 100 feet from the source. Therefore, noise associated with construction activity at the nearest existing residences (approximately 3,000 feet from the nearest proposed turbine) would not be perceptible, especially given the ambient noise sources in the area. Therefore, the anticipated noise levels generated at the site during the construction phase would not be expected to exceed noise levels of the existing ambient noise environment within the project area. Considering that the construction noise levels associated with the proposed facilities would be temporary and the project operator would adhere to local noise ordinances, the construction noise would be less than significant.

Long-Term Operational Impacts

Long-term acoustic impacts could occur as a result of operational noise and on-going maintenance activities associated with the proposed turbines.

The nearest noise sensitive uses are single-family homes and a park, located approximately 3,000 feet south of the nearest proposed wind turbine. Project-generated noise levels at these locations and others further distant to the southwest and southeast, were computed using turbine noise emission levels as determined using IEC standard measurement procedures. As discussed in Section 2.0 of this EIR/EIS, the project will consist of either 49 1,000 kW Mitsubishi Heavy Industries (MHI) or 58 850 kW Gamesa Eolica wind turbines, arranged in five rows. Figures 1 and 2 in Appendix F show the locations of the noise sensitive uses relative to the wind turbine rows.

The Reference Noise Level (RNL, noise level at 400 feet at 90% power) for the Gamesa turbine is 52.5 dB based on the measurements. For the MHI turbine, the measured value of RNL would be 48.8 dB. However, the warranted standard noise emission level of the MHI turbine is higher than

the reported measurements by approximately 3.5 dB, resulting in RNL 52.4 dB for purposes of project evaluation.

Noise contours were computed on 5 dB increments around the project, using methodology equivalent to the methods identified in the Palm Springs Noise Ordinance. The atmospheric loss is approximately 3 dB per km, which is nearly the same as the 1 dB per 1,000 foot factor often used to calculate noise contours from overall noise emission levels. To compute noise contours, receptor sites encompassing the project and surrounding existing or projected noise sensitive uses were calculated using computer modeling. The resulting noise contours are shown on *Figures 3.8-1* and *3.8-2*. As shown, projected noise levels at the nearest sensitive receptors will be between the 40 and 45 dB noise contours, which are well below the City's 55 dB criterion established by the Noise Ordinance. Therefore, impacts related to operational noise will be less than significant.

3.8.4 Mitigation Measures

No significant impacts have been identified; therefore, no mitigation measures are required. However, the following environmental commitment will be incorporated into the project.

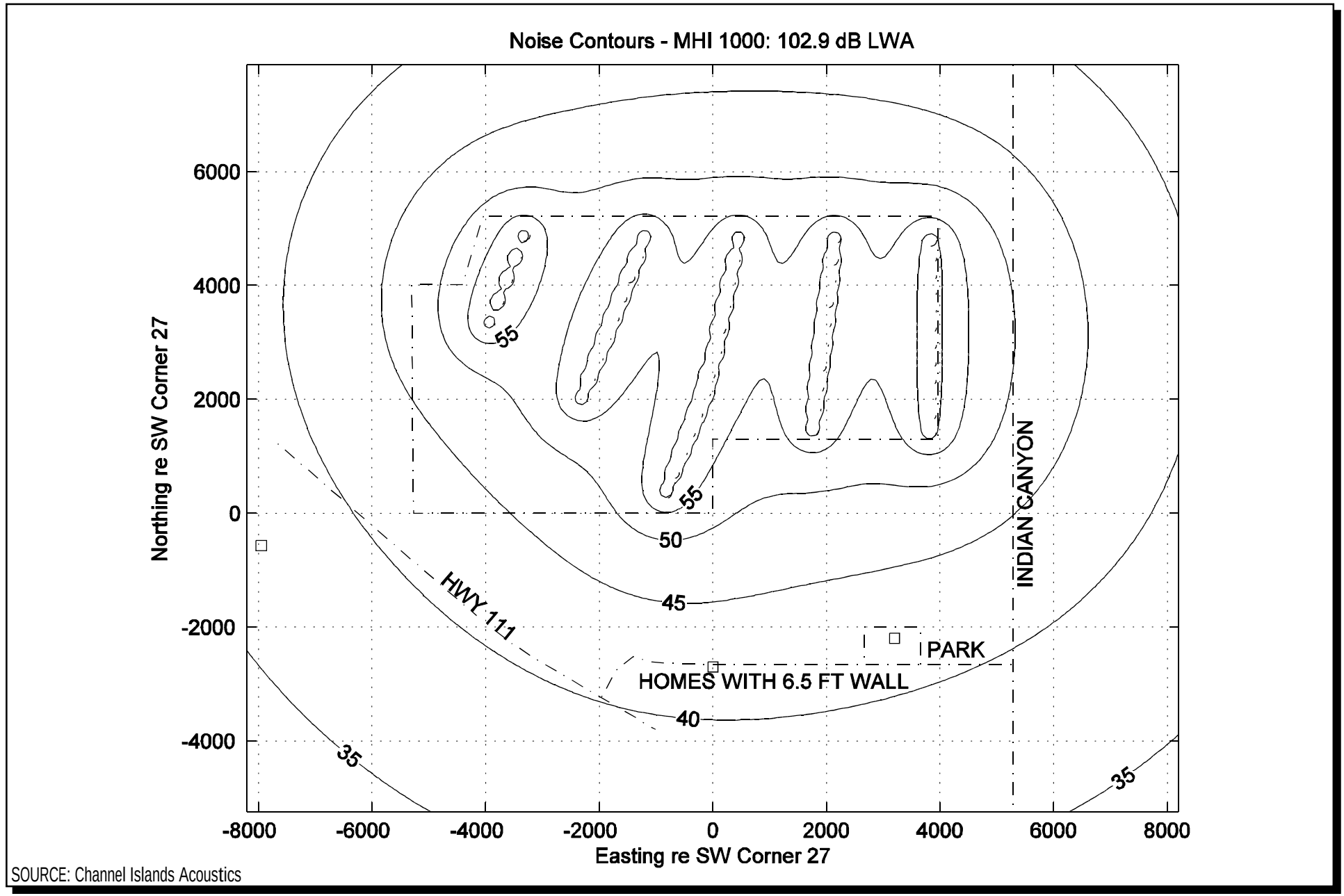
3.8-1. The project will adhere to local noise ordinances during construction and project operation to keep noise levels at nearby residences lower than the City's 55dB noise criterion.

3.8.5 Reduced Development Alternative

Under the Reduced Development alternative, no wind turbines would be placed within Section 27. However, the noise analysis for the project indicates that noise levels would be well below the City's 55 dB criterion for wind energy noise at residences and other noise sensitive uses. Similarly, no significant construction related noise was identified for the project. Therefore, since the project will not have any significant noise impacts, this alternative is not regarded as environmentally superior to the proposed project (preferred alternative).

3.8.6 No Project Alternative

Under the No Project alternative, noise would remain at ambient levels, including roadway noise from North Indian Canyon Drive and Highway 111, and noise from existing wind turbines and the Southern Pacific Railroad. No noise would be generated by construction, construction traffic, or long term use of the parcels under consideration for the proposed project.

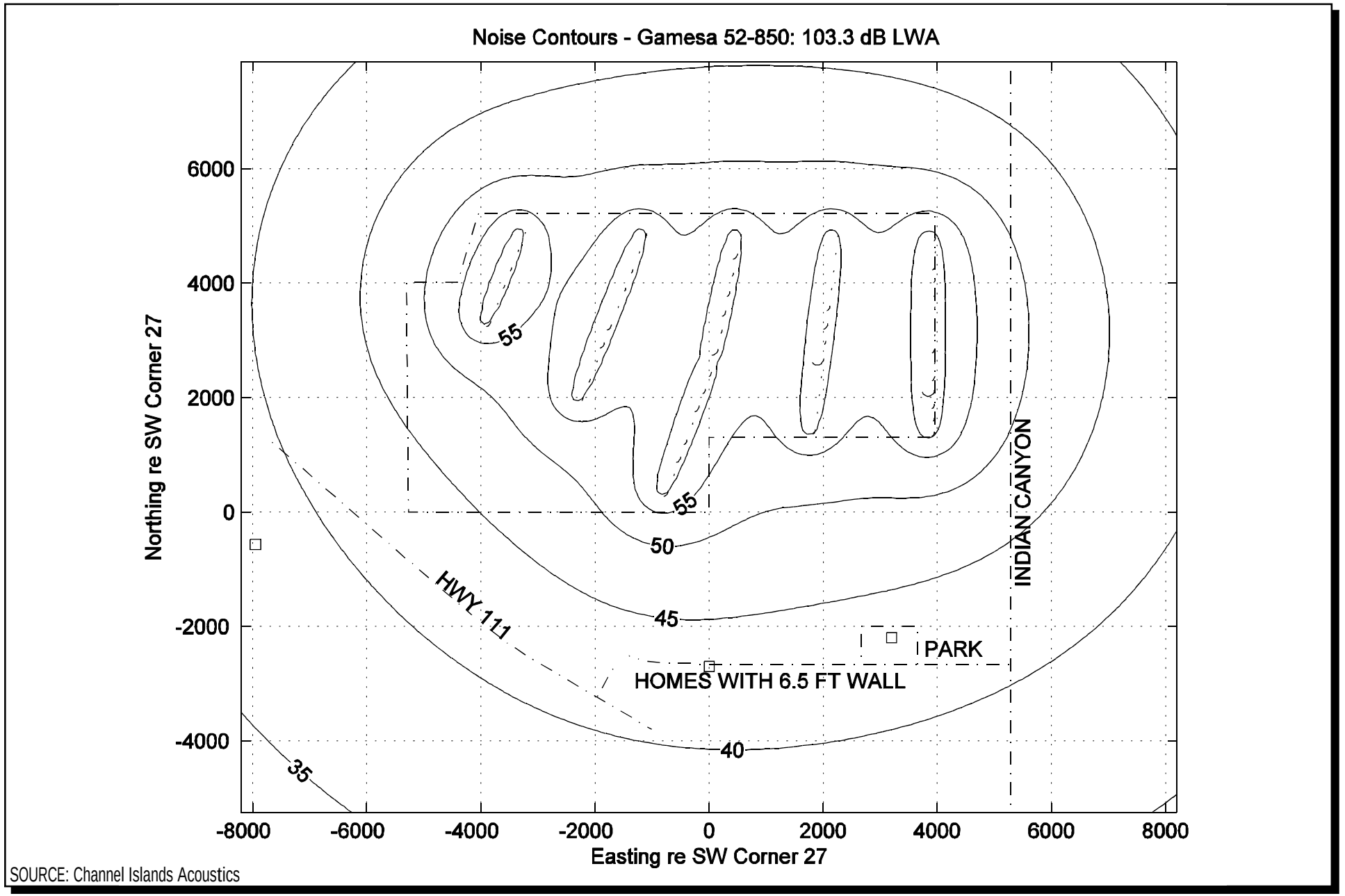


SOURCE: Channel Islands Acoustics

Mountain View IV Wind Energy Project EIS/EIR

Noise Contours - Mitsubishi 1000A Turbines

FIGURE
4.8-1



SOURCE: Channel Islands Acoustics

Mountain View IV Wind Energy Project EIS/EIR

Noise Contours - Gamesa G52 Turbines

FIGURE 4.8-2